

## Claim Amendments

### **WHAT IS CLAIMED:**

1. (Cancelled) An implantable system comprising:
  - (a) a cell repopulation source capable of forming new contractile tissue in and/or near damaged or diseased myocardial tissue; and
  - (b) an electrical stimulation device for electrically stimulating the new contractile tissue in and/or near the damaged or diseased or myocardial tissue.
- 10 2. (Cancelled) The implantable system of claim 1 wherein the cell repopulation source comprises undifferentiated contractile cells.
3. (Cancelled) The implantable system of claim 2 wherein the undifferentiated contractile cells comprise skeletal muscle satellite cells.
- 15 4. (Cancelled) The implantable system of claim 2 wherein the undifferentiated contractile cells comprise autologous cells.
5. (Cancelled) The implantable system of claim 1 wherein the cell repopulation source comprises genetic material.
- 20 6. (Cancelled) The implantable system of claim 5 wherein the genetic material comprises a delivery vehicle comprising a nucleic acid molecule.
- 25 7. (Cancelled) The implantable system of claim 6 wherein the nucleic acid molecule encodes a myogenic determination gene.

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8. (Cancelled) The implantable system of claim 6 wherein the delivery vehicle comprises a viral expression vector.
9. (Cancelled) The implantable system of claim 6 wherein the delivery vehicle comprises liposomes.
10. (Cancelled) The implantable system of claim 5 wherein the genetic material comprises plasmid DNA.
11. (Cancelled) The implantable system of claim 1 wherein the cell repopulation source further comprises a polymeric matrix.
12. (Cancelled) The implantable system of claim 1 wherein the cell repopulation source is associated with a carrier.
13. (Cancelled) The implantable system of claim 12 wherein the cell repopulation source is coated on a carrier.
14. (Cancelled) The implantable system of claim 1 wherein the electrical stimulation device comprises a muscle stimulator having two electrodes connected thereto.
15. (Cancelled) The implantable system of claim 14 wherein the muscle stimulator is implantable and is in the form of a capsule having electrodes incorporated therein.
16. (Cancelled) The implantable system of claim 15 wherein the muscle stimulator is a carrier for the cell repopulation source.

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17. (Cancelled) The implantable system of claim 1 wherein the electrical stimulation device provides burst stimulation.
18. (Cancelled) The implantable system of claim 1 wherein the electrical stimulation device provides pulse stimulation.
19. (Cancelled) An implantable system comprising:
  - (a) a cell repopulation source for a patient's myocardium; and
  - (b) an electrical stimulation device for electrically stimulating the new contractile tissue in and/or near the infarct zone of the patient's myocardium, wherein the electrical stimulation device provides burst stimulation.
20. A method of repairing the myocardium of a patient, the method comprising:
  - (a) providing an implantable system comprising:
    - (i) a cell repopulation source comprising genetic material, undifferentiated contractile cells, or a combination thereof, capable of forming new contractile tissue in and/or near an infarct zone of a patient's myocardium; and
    - (ii) an electrical stimulation device for electrically stimulating the new contractile tissue in and/or near the infarct zone of the patient's myocardium;
  - (b) implanting the cell repopulation source into and/or near the infarct zone of the myocardium of a patient;
  - (c) allowing sufficient time for new contractile tissue to form from the cell repopulation source; and
  - (d) electrically stimulating the new contractile tissue.

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21. The method of claim 20 wherein the electrical stimulation device comprises a muscle stimulator and electrodes; wherein the electrodes are implanted into and/or near the infarct zone of the myocardium.

5 22. The method of claim 20 wherein the muscle stimulator is implantable and is in the form of a capsule having electrodes incorporated therein.

23. The method of claim 22 wherein the muscle stimulator is a carrier for the cell repopulation source.

10 24. The method of claim 23 wherein the muscle stimulator and cell repopulation source are delivered to the infarct zone through a catheter.

15 25. The method of claim 20 wherein the undifferentiated contractile cells comprise autologous cells.

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### **Method and System for Myocardial Infarct Repair**

#### Abstract of the Disclosure

An implantable system is provided that includes: a cell repopulation source comprising genetic material, undifferentiated and/or differentiated contractile cells, or a combination thereof capable of forming new contractile tissue in and/or near an infarct zone of a patient's myocardium; and an electrical stimulation device for electrically stimulating the new contractile tissue in and/or near the infarct zone of the patient's myocardium or otherwise damaged or diseased myocardial tissue.